

Amendments to the Claims

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A process for the diesterification of ~~C₄-dicarboxylic acids~~ maleic acid by reaction of ~~the dicarboxylic~~ maleic acid with methanol in the presence of water of solution comprising the steps of:

- (a) providing a solution comprising ~~the dicarboxylic maleic~~ acid and the water of solution;
- (b) reacting the solution of ~~the dicarboxylic maleic~~ acid in an esterification zone with methanol to form ~~an ester~~ dimethyl maleate and water of esterification; said esterification being conducted at temperatures of from 65 to 150°C and pressures from 1 to 5 bar in a two-stage process;
- (c) removing the water of solution and the water of esterification; and
- (d) recovering the ester dimethyl maleate.

Claim 2 (original): A process according to Claim 1 wherein the process of the present invention is a continuous process.

Claim 3 (previously presented): A process according to Claim 1 wherein the water removed in step (c) is recycled to step (a).

Claim 4 (cancelled)

Claim 5 (previously presented): A process according to Claim 1 wherein the feed in step (a) comprises from about 50 to about 70 wt% water.

Claim 6 (previously presented): A process according to Claim 1 wherein the acid feed is processed prior to its supply to step (a) to reduce the water content.

Claim 7 (currently amended): A process according to Claim 1 in which the solution of maleic acid is subjected in the first stage to mono-esterification in parallel with a mono-esterification of a feed of anhydride.

Claim 8 (cancelled)

Claim 9 (currently amended): A process according to Claim 1 in which the reaction of step (b) is carried out in an esterification zone comprising a first reactor in which ~~the~~ maleic acid is converted to the mono ester and a second reactor in which the mono ester is converted to the diester.

Claim 10 (previously presented): A process according to Claim 1 in which one or more heaters is provided in the esterification zone, wherein the esterification zone comprises one or more reactors.

Claim 11 (previously presented): A process according to Claim 10 in which the one or more heaters are located in the or each reactor close to the feed point at least one heater is located close to the feed point of at least one reactor.

Claim 12 (previously presented): A process according to Claim 1 in which water of solution and the water of esterification are substantially stripped out.

Claim 13 (previously presented): A process according to Claim 1 in which the esterification is carried out in the presence of a catalyst.

Claim 14 (previously presented): A process according to Claim 1 in which the second step of the esterification reaction is carried out in the presence of a catalyst.

Claim 15 (original): A process according to Claim 13 or 14 in which the catalyst is a liquid catalyst.

Claim 16 (currently amended): A process according to Claim 1 wherein the ~~ester~~ dimethyl maleate recovered in step (d) is contacted with a hydrogen containing stream in a hydrogenation zone containing a charge of a hydrogenation catalyst effective for catalytic hydrogenation to convert at least some of the ~~ester~~ dimethyl maleate to a desired product.

Claim 17 (currently amended): A process according to Claim 16 wherein the water of solution and water of esterification is removed prior to the ~~ester~~ dimethyl maleate being passed to the hydrogenation zone.

Claim 18 (previously presented): A process according to Claim 16 wherein hydrogenation is carried out in the vapour phase in the presence of a heterogeneous ester hydrogenation catalyst.

Claim 19 (currently amended): A process according to Claim 16 wherein ~~the alcohol~~ methanol is recovered from the hydrogenation zone and recycled to the esterification zone of step (a).

Claim 20 (cancelled)

Claim 21 (cancelled)

Claim 22 (currently amended): A process according to Claim [[21]] 1 in which the maleic acid feed to be formed by hydrolysis of the product from a maleic anhydride reactor and ~~the a~~ water rich stream recovered from the esterification zone is recycled to ~~the an~~ absorber in which hydrolysis of the product from the maleic anhydride reactor is carried out.